

# Appendix 17a

## Definitions for Old Forest

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### Contents

Introduction .....	17a-2
Purpose and Scope .....	17a-2
Definition .....	17a-2
Description .....	17a-2
References .....	17a-3
Example .....	17a-4
Table I. Standard Summary of Old-Growth Characteristics .....	17a-5

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## Introduction

In October, 1989, the Chief of the Forest Service directed all Regional Foresters to develop ecologically based old-growth. (The terms “old growth” and “old forest” are used synonymously in the Interior Columbia Basin Ecosystem Management Project Environmental Impact Statement. Project personnel have favored use of “old forest” as more evocative of the ecosystem being discussed.) Definitions for the major forest cover types as defined in *Forest Cover Types of the United States and Canada*, Society of American Foresters, F.H. Eyre, Editor, 1980. The definitions were to be based upon the generic direction described in the following sections.

## Purpose and Scope

The following describes the ecologically important structural features of old-growth ecosystems. Measurable criteria for these attributes will be established in more specific definitions for forest types, habitat types, plant associations, or groupings of them. The intent of the generic definition is to guide design of specific definitions.

## Definition

Old-growth forests are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function.

## Description

The age at which old growth develops and the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site conditions, and disturbance regime. For example, old growth in fire-dependent forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, old growth is typically distinguished from younger growth by several of the following attributes:

1. Large trees for species and site.
2. Wide variation in tree sizes and spacing.
3. Accumulations of large-size dead standing and fallen trees that are high relative to earlier stages.
4. Decadence in the form of broken or deformed tops or bole and root decay.
5. Multiple canopy layers.
6. Canopy gaps and understory patchiness.

Compositionally, old growth encompasses both older forests dominated by shade-intolerant species, which are fire-dependent, and forests in near climax stages dominated by shade tolerant species. Rates of change in composition and structure are slow, relative to younger forests. Different stages or classes of old growth will be recognizable in many forest types.

Sporadic, low to moderate severity disturbances are an integral part of the internal dynamics of many old-growth ecosystems. Canopy openings resulting from the death of overstory trees often give rise to patches of small trees, shrubs, and herbs in the understory.

Old growth is not necessarily “virgin” or “primeval.” Old growth could develop following human disturbances.

The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context.

The measurable criteria mentioned above, under *Purpose and Scope*, have been established in more specific definitions by each of the three Forest Service Regions (Northern, Intermountain, and Pacific Northwest) that manage National Forest System lands within the Interior Columbia Basin Ecosystem Management Project (ICBEMP) project area. These three sets of criteria for old-growth ecosystems will be used as guidance by Forest Service and Bureau of Land Management personnel at the Forest, District, and Field Office level during implementation of the management direction of the ICBEMP. For example, the direction for terrestrial source habitat restoration calls for increase in geographic extent and connectivity of various cover types and structural stages, including single-story and multi-story old forest. The three Regional sets of criteria will help field personnel identify old forest cover type.

These three documents have not been included in this appendix in their entirety because of their length. (They total over 300 pages.) If the reader wants to examine them, they will be made available for review if you call the respective Forest Service Regional Offices or the ICBEMP office, 304 N. 8th Street, Room 250, Boise, ID 83702, telephone (208) 334-1770.

## References

Old-Growth Forest Types of the Northern Region, USDA Forest Service, Missoula Montana, April, 1992

Characteristics of Old-Growth Forests in the Intermountain Region, USDA Forest Service, Ogden, Utah, April, 1993.

Region 6, Interim Old Growth Definition, USDA Forest Service, Portland Oregon, June, 1993.

What follows is an example from the Intermountain Region's publication, to show the kind of information in the specific definitions. This sample discusses the Society of American Foresters (SAF) cover type *Interior Ponderosa Pine*, including a table that summarizes old-growth characteristics for ponderosa pine forests of central Idaho.

## Example Old-Growth Characteristics

Species: *Pinus ponderosa* variety *ponderosa* Pacific ponderosa pine - North Plateau Race

### Description

The SAF defined interior ponderosa pine cover type encompasses a very large area of the western United States. In the Intermountain Region it occupies two distinct ecosystem situations. Pacific ponderosa pine, a broadly distributed species, has a distinct north plateau race. That race occurs east of the Cascade Mountains throughout Oregon, Washington, and into Idaho and Montana, and is the sole race discussed in this section.

This cover type has been dramatically altered by human activity. Exclusion of fire and intensive livestock grazing activities have altered stand composition. Often seral ponderosa pine stands are being replaced by associated species, such as Douglas-fir, grand fir, and occasionally lodgepole pine. In all cases, regeneration is much more abundant and has created a layered stand structure largely uncommon in presettlement conditions. Current descriptions of old-growth could be greatly contrived by man's somewhat sporadic actions. Susceptibility to catastrophic events such as fire and pathogens is dramatically changing. The capability to maintain current characteristics of developed old-growth stand attributes is not fully known or understood. However, ponderosa pine, which is a long-lived species may be slowly lost as a major cover type through successional advances, control of fire, and other human-controlled, ecosystem-altering practices.

### Area of Application

In the Intermountain Region this Interior ponderosa pine north plateau race cover type occurs only on the Boise, Payette, Sawtooth, and Salmon National Forests. Within the interior ponderosa pine cover type in southwest Idaho, there are also two distinct categories of situations for old-growth ecosystem definitions:

1. Interior ponderosa pine cover type where ponderosa pine is the climax species; climax sites,
2. Interior ponderosa pine cover type where ponderosa pine is the dominant seral species; seral sites.

### Description of Attributes for Interior Ponderosa Pine (See Table 1)

#### Live Trees

Live trees on seral sites: When a combination of 10 or more trees per acre in the overtopping canopy with a minimum diameter breast height (DBH) of 24 inches or more at an age of 200 years or older are found, old-growth characteristics are evident. These seral sites are generally the moister sites occurring on Douglas-fir and grand fir habitat type series.

Live trees on climax sites: The only difference on a climax site is that at least five trees or more per acre are present. These sites are usually on areas that do not support dense canopies of trees.

Note that in all cases the minimums are not absolute values so minor variations are acceptable.

The old-growth nature of these stands results in a variety of tree ages and sizes. Consequently, there should be at least two recognizable size classes that differ by at least 6 inches in diameter. The size difference should also create at least two layers in the tree canopy on the seral sites. The smaller diameter tree occurs within the same canopy layer on climax sites and has only one canopy layer.

#### Dead trees

Snags will normally be found on the climax sites, but may be clumpy and infrequent. Over large areas up to one snag per acre with a 20-inch DBH or larger, and length of at least 20 feet (average) should exist for seral sites. Insects, root and stem pathogens, and fire are the principal agents causing the development of snags in this cover type.

Climax sites generally have low or infrequent amounts of down woody material. On large area seral sites, one piece, 16 linear feet in length, at least 12 inches diameter at the small end (average) on a per acre basis should exist. This attribute is a function of site productivity, age, and the degree of decadence in the stand. Materials of smaller diameters do not normally persist long enough to be included in the old-growth conditions.

**Table 1. Standard Summary of Old-Growth Characteristics**

Live Trees				Dead Trees		
Main Canopy		Tree Diameter	Variation in Decadence	Tree Canopy Layers	Tree Standing	Down
DBH	TPA	Age	6" Classes	TPA-DBH	Number	Pieces/ac min length
Seral Sites						
24	≥10	200	≥2	N/A	2	12 0-16
Climax Sites						
24	≥5	200	≥2	N/A	1	N/A Infrequent

Abbreviations used in this table:

- TPA = Trees per Acre
- DBH = Diameter at Breast Height
- Ht = Height
- Vegetative Series: Douglas-fir, grand fir
- SAF Cover Type: Interior ponderosa pine
- Applicable Area: Boise, Payette, Salmon, and Sawtooth NF

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